

Pat nt Claims

- Seba -*
1. Hydrogel comprising at least one protein and/or enzyme and/or SOD/catalase enzyme mimic and PEGs, and parts of proteins and enzymes and/or recombinant proteins and enzymes, the proteins and/or enzymes being connected to the PEGs via urea groups.
 2. Hydrogel according to Claim 1, characterized in that the PEG has a molecular weight of from 8,000 to 18,000 g/mol, in particular from 10,000 to 15,000 g/mol.
 3. Hydrogel according to Claims 1 and 2, characterized in that aliphatic or aromatic or araliphatic diisocyanates, in particular 1,6-hexamethylene diisocyanate, are employed to activate the PEGs.
 4. Hydrogel according to Claims 1 to 3, characterized in that antibodies, matrix metalloproteases, enzyme inhibitors, peptides are used as proteins.
 5. Hydrogel according to Claims 1 to 4, characterized in that free radical scavengers such as superoxide dismutase, catalase, glutathione peroxidase, myeloperoxidase and SOD/catalase enzyme mimics and/or combinations thereof are used as proteins.
 6. Hydrogel according to Claims 1 to 5, characterized in that enzymes with antimicrobial activity, such as lysozyme and hydrolases, are employed as proteins.
 7. Hydrogel according to Claims 1 to 6, characterized in that enzymes with phosphorylating activity, such as phosphatases and kinases, are employed as proteins.
 8. Hydrogel according to Claims 1 to 7, characterized in that growth factors such as PDGF are employed as proteins.
 9. Hydrogel according to Claims 1 to 8, characterized in that enzymes with proteolytic activity, such as collagenase, trypsin, elastase and/or combinations thereof, are employed as proteins.

- Secta' Cont'd*
10. Hydrogel according to Claims 1 to 9, characterized in that proteinogenic protease inhibitors such as aprotinin, soya bean trypsin inhibitor and alpha-2-macroglobulin and/or combinations thereof are employed as proteins.
 11. Hydrogel according to Claims 1 to 10, characterized in that proteins are employed in mixtures.
 12. Process for producing a hydrogel according to at least one of the preceding claims, characterized in that
 - e) anhydrous PEGs are reacted with diisocyanate in a solvent, where appropriate with the addition of a catalyst,
 - f) the solvent is removed from the resulting product of activated PEGs by filtration, washing or drying,
 - g) the activated PEGs are reacted in aqueous solution with proteins, the proteins being present in a buffer which is preferably chosen so that the proteins retain their biological activity,
 - h) where appropriate, purification steps and washes are carried out.
 13. Process for producing a hydrogel according to Claim 12, characterized in that the hydrogel is dehydrated.
 14. Use of the hydrogel according to at least one of the preceding claims as wound dressing, in particular for deep and extensive chronic wounds, and burns.
 15. Use of the hydrogel according to at least one of the preceding claims for application to substrate materials which are permeable to air and water vapour, where appropriate, such as bandages, compresses, plasters, sheets, films and the like.

Add a² >